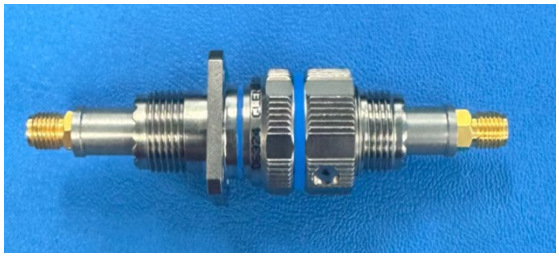
GT-24-121

COAX CONTACT, G-LINK, BMB to SMA, SIZE 8, 50 OHMS

CONTACTS 852-157, 852-158, and 852-256

RF Signal Integrity Report



Revision History

Rev	Date	Issued	Approved	Description
1	6/27/2024	L. Blackwell / W. Lewis	G. Hunziker	Initial Release

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1. Introduction

This document contains results from testing that was performed to evaluate the high-frequency electrical performance of the Glenair G-Link Size 8 BMB to SMA contacts designed for SuperNine, 806RF, and 795 series connectors. G-Link contacts were tested in a mated pair of SuperNine connectors with a ground-plane insert and a mated pair of 806RF connectors. This report outlines the frequency domain performances of Insertion Loss (IL), Return Loss (RL), Voltage Standing Wave Ratio (VSWR) as well as the time-domain characteristic impedance performance.

2. Product Overview

To address SWaP (Size, Weight, and Power) concerns, RF designers are continually designing components smaller, with more, higher density, and higher frequency RF connections. Glenair has taken the MIL-STD-348, BMB interface, and incorporated it into a Size 8 contact that allows customers much more freedom when choosing a multiple cavity circular or rectangular connector. The Glenair BMB contact has been designed and optimized for low insertion loss, low VSWR and improved impedance allowing performance to 18 GHz.

3. Test Information

3.1.Test Samples

The test samples consisted of the BMB to SMA pin contact 852-157, and the BMB to SMA socket contacts 852-158 and 852-256. These contacts are shown in Figure 1 and Figure 2.

Figure 1. 852-157 and 852-158 Test Contact Samples (SuperNine Style)

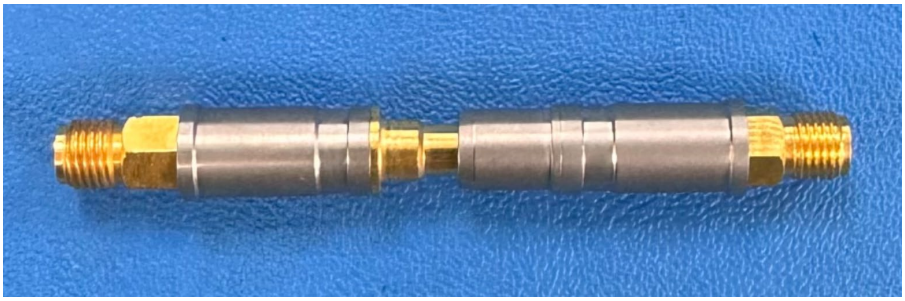

Figure 2. 852-157 and 852-256 Test Contact Samples (806RF/795 Style)

Contacts 852-157 and 852-158 were installed in a mated pair of 233-217 SuperNine circular connectors with a ground plane insert. Contacts 852-157 and 852-256 were installed in a mated pair of 806-072 Plug and 806-073 Receptacle 806RF circular connectors. The assembled, mated samples are shown in Figure 3 and Figure 4.

Figure 3. SuperNine Mated Connection

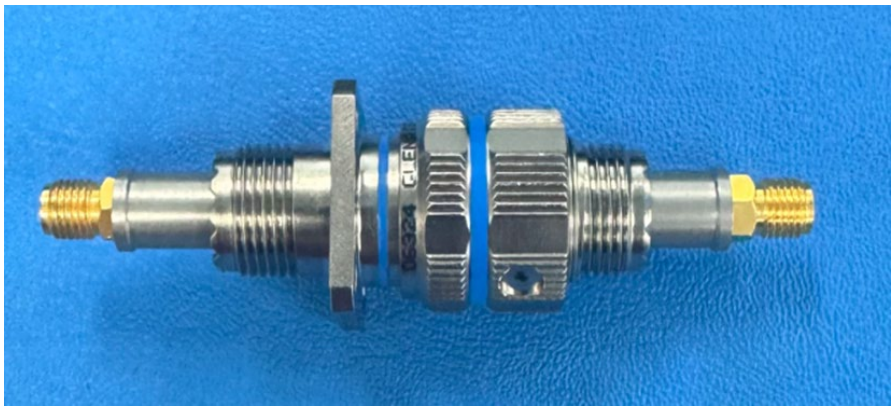

Figure 4. 806RFMated Connection

3.2.Test Setup

Measurements were taken using a Tektronix DSA8300 Digital Serial Analyzer and an Anritsu MS46524B Vector Network Analyzer. No test fixturing was required as the test samples are directly connected to the test equipment. The test data was saved in a touchstone (.s2p) format for the s-parameters and in a .csv format for the impedance data.

4. Test Results

4.1.1. Insertion Loss

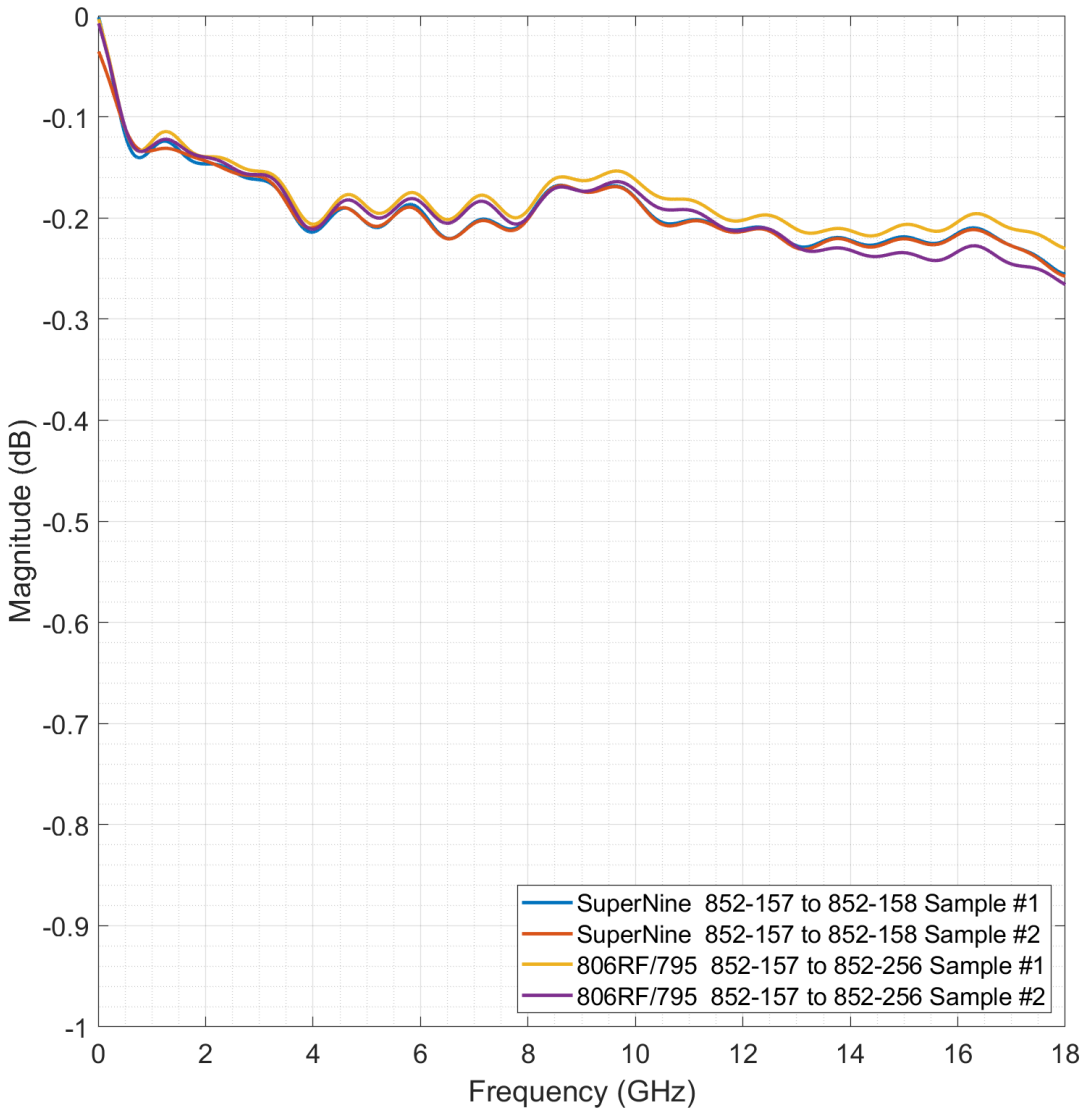

Figure 5. Insertion Loss

4.1.2. Return Loss

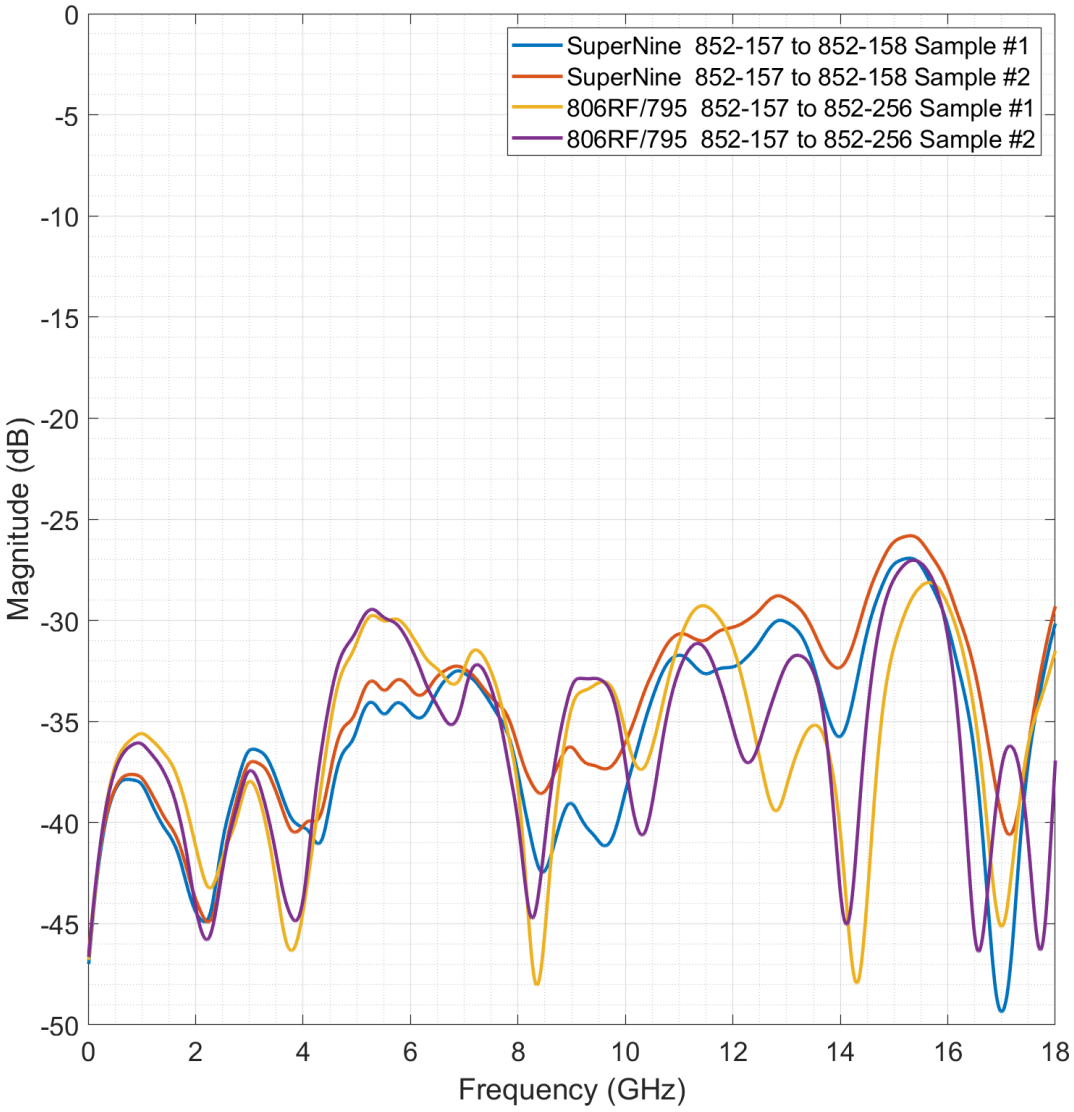

Figure 6. Return Loss

4.1.3. VSWR

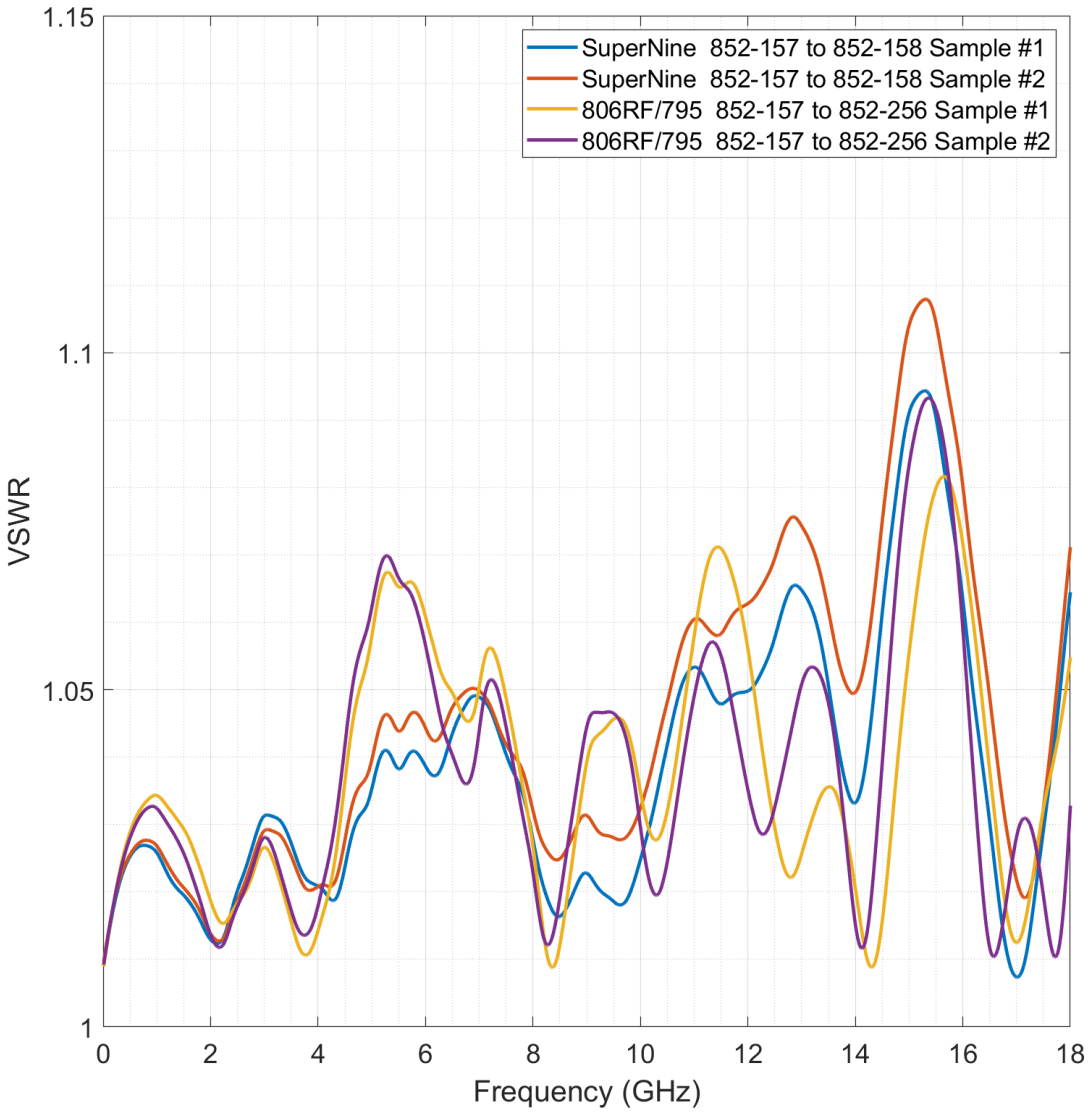

Figure 7. VSWR

4.1.4. Time Domain Analysis

Time domain data was generated in real time using a Tektronix DSA8300 Digital Serial Analyzer. Figure 8 shows the impedance profile at rise times of 25ps and 50ps. Rise time is defined at 10% to 90% of the signal's rising edge. The following table shows the relative bandwidth, BW, for a given TDR test step rise time, t_r.

t_r (ps)	BW(GHz)
25	14
50	7

Table 1. Bandwidth to Rise Time Relationship

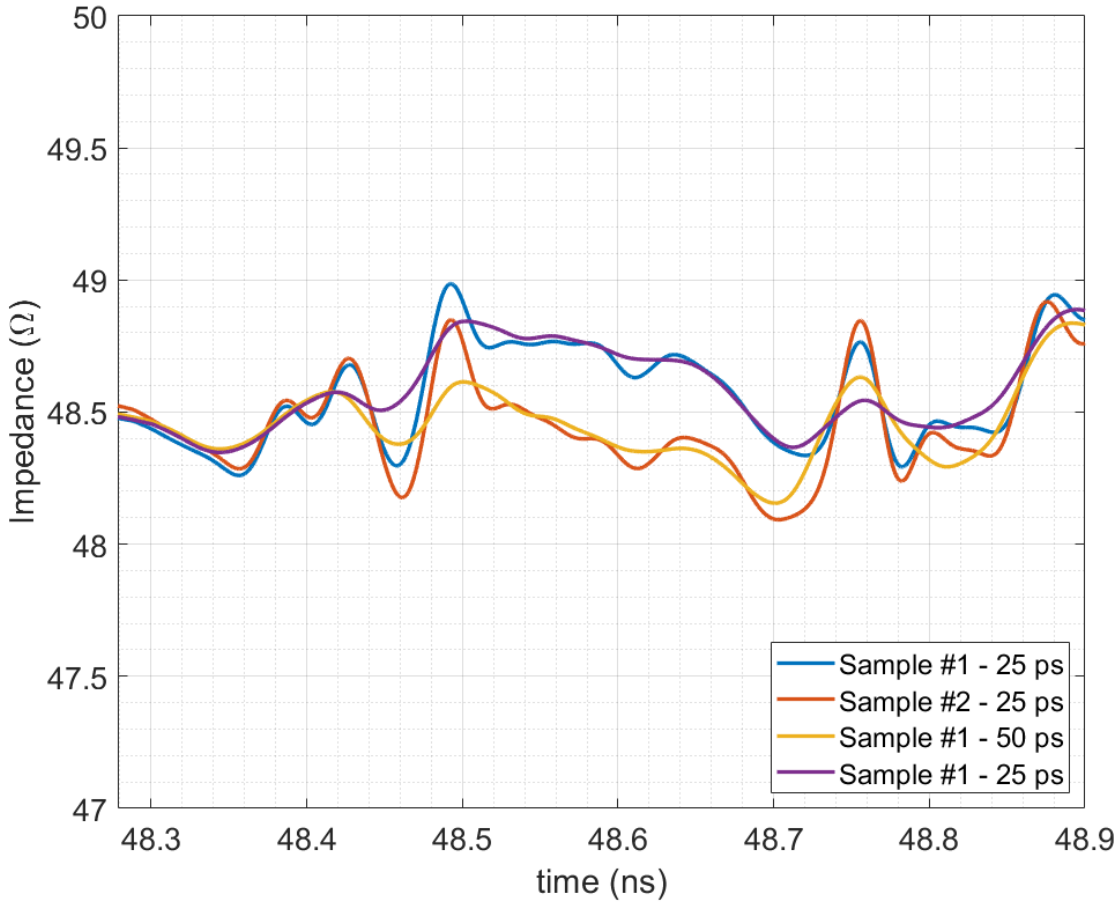

Figure 8. TDR Profile – SuperNine 852-157 and 852-158

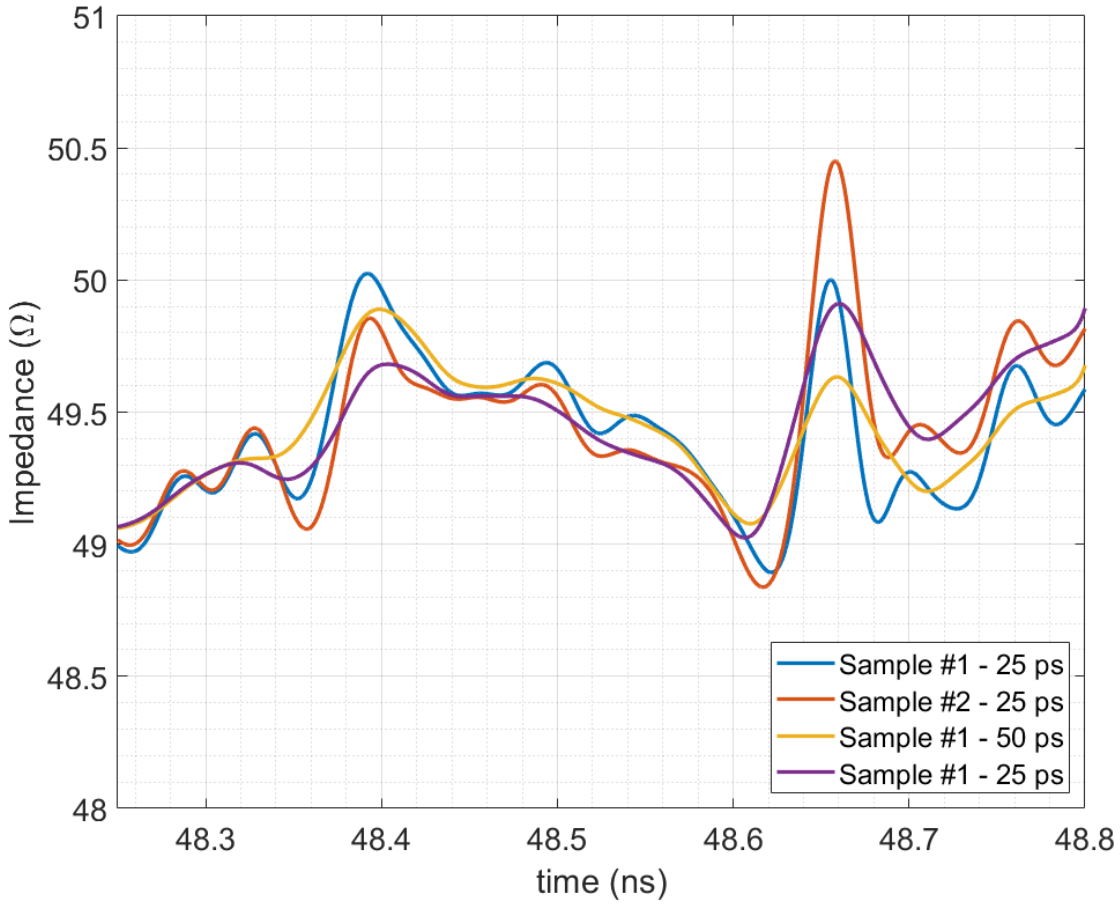

Figure 9. TDR Profile – 806RF/795 852-157 and 852-256